



The Market for Pollution

Throughout much of its short history, environmental protection in the United States has been guided by a traditional paradigm based on strict regulatory guidelines for reducing emissions and punishments for noncompliance. Experts credit this traditional approach with improvements in air and water quality evident since the U.S. Environmental Protection Agency (EPA) was created more than 30 years ago. Tough environmental standards imposed under programs such as the Clean Water Act and the Clean Air Act filled a regulatory void and forced industries to cut their emissions or face heavy fines. Many of the greatest gains were seen with respect to point sources such as smokestacks and effluent pipes that could be easily monitored. But beyond the avoidance of penalties, industries regulated under these so-called command-and-control programs had little motivation to develop advanced pollution control technologies, which produced little economic gain.

Today, many stakeholders believe a more modern framework based on economic incentives that allow companies to profit from achieving environmental goals will build on the achievements of the past and allow for even greater improvements in environmental protection. Types of incentives vary widely, but they all share one thing in common: they attach a monetary value to the act of reducing pollution. In a January 2001 document titled *The United States Experience with Economic Incentives for Protecting the Environment*, the EPA described several types of incentives, including fees and taxes levied on pollutant releases, tax rebates for environmental technologies, and the trading of air emissions permits on the open market.

Attention is increasingly turning to the use of economic incentives in the wake of President George W. Bush's pledge to make them a foundation of his environmental policy. During the 2000 presidential campaign, Bush said that under his watch government would "set high environmental standards and provide market-based incentives to develop new technologies . . . so that Americans could meet and exceed those standards."

Business organizations have responded warmly to the administration's support for incentives. For example, the Business Roundtable, a Washington, D.C.-based nonprofit organization of "CEOs committed to improving public policy," released a statement on 17 May 2001 that "applauds President Bush for incorporating the use of new technologies, as well as incentives that spur technological innovation, as the cornerstone of the administration's national energy policy."

Among the environmental community, the idea that market instruments could be used to control pollution was initially greeted with skepticism and even hostility. But over time, support has risen to a level that Joseph Goffman, a senior attorney with the public interest group Environmental Defense in Washington D.C., describes as "lukewarm to enthusiastic in many cases."

According to Goffman, economic incentives motivate companies to reduce pollution quickly and to exceed environmental standards whenever possible. This is in contrast to command-and-control approaches, which he says stifle innovation while encouraging polluters to do little more than meet minimum requirements. Under a traditional system, the EPA not only sets environmental standards, it often describes how companies should achieve them—a scenario sometimes described as "technology forcing."

Goffman suggests the downside to this approach is that the EPA usually only sets standards that can be met with current technology. This means companies have to wait for the agency to finish a technology review before either the EPA or the states revise a given standard. "With incentive programs," he says, "you don't have this kind of chicken-and-egg mentality. The agency sets a target and leaves the means of compliance up to industry. Companies want to profit from pollution control, so they invest more resources in technology development." Furthermore, Goffman adds, market forces naturally gravitate toward the least-cost option for reducing pollution, while traditional regulatory strategies lock companies into technologies that become progressively less effective, and thus less attractive, over time.

Most experts suggest it's too soon to gauge where and how incentive programs will grow under the Bush administration. This is because a host of key positions at the EPA and other agencies remain unfilled, and policy directions have yet to be fully clarified. However, Bush's commitment to market forces is undiminished, as indicated by comments from White House spokesperson Marcy Viana, who, referring to the president's position on global warming during an interview on 4 June 2001, said, "[He is] committed to reducing greenhouse gas emissions by drawing on the power of the market and the power of technology."

Emissions Trading Schemes

The most significant developments in incentive programs have occurred in the area of emissions trading, through which air pollutants are viewed as tradable commodities, each with its own regional, national, and even international markets. In an emissions trading program, companies that emit less than their assigned limits, or caps, of a pollutant can sell residual allowances on the open market or bank them for future transactions. This gives other, higher-polluting facilities a choice: either buy allowances and continue releasing the same pollutant or clean their own emissions—whichever is cheaper. The only stipulation is that regional environmental quality continue to meet mandated standards.

These so-called cap-and-trade schemes aren't new. The best-known example is the Acid Rain Program established under the Clean Air Act amendments of 1990, which allows electric utilities to trade allowance credits in sulfur dioxide (SO₂). Many experts point to this initiative, which achieved dramatic reductions in SO₂ at lower costs than expected, as an emissions trading success story. The EPA estimates that since the program was formalized in 1995, annual emissions of SO₂ have fallen by 4 million tons, while rainfall acidity in the Northeast has dropped by 25%. Dallas Burtraw, a senior fellow at Resources for the Future in Washington, D.C., says the program works well because it's simple, it sets firm environmental targets, it keeps transaction costs to a minimum, and it's transparent—meaning that information on available allowances and credit trades is freely available to the public.

The success of the Acid Rain Program has fueled the development of similar initiatives within the private sector. Undeterred by President Bush's rejection of the Kyoto Protocol, a diverse group of 34 major companies called the Chicago Climate Exchange (CCX) recently announced an emissions trading scheme for carbon dioxide and other

greenhouse gases. Boasting high-profile members such as BP, Ford Motor Company, DuPont, and International Paper, this effort aims to reduce greenhouse gas emissions to 5% below 1999 levels by 2005. The CCX's role will be similar to that of an organized commodity exchange—it will establish the requisite technical infrastructure, common standards, and a computerized platform through which participants can trade in emissions reductions.

Richard Sandor, project leader at the CCX, points to the following hypothetical trade as an example of how the system will work: Two companies, a manufacturer with advanced pollution control technology and a power plant with older controls, agree to cut their combined emissions of

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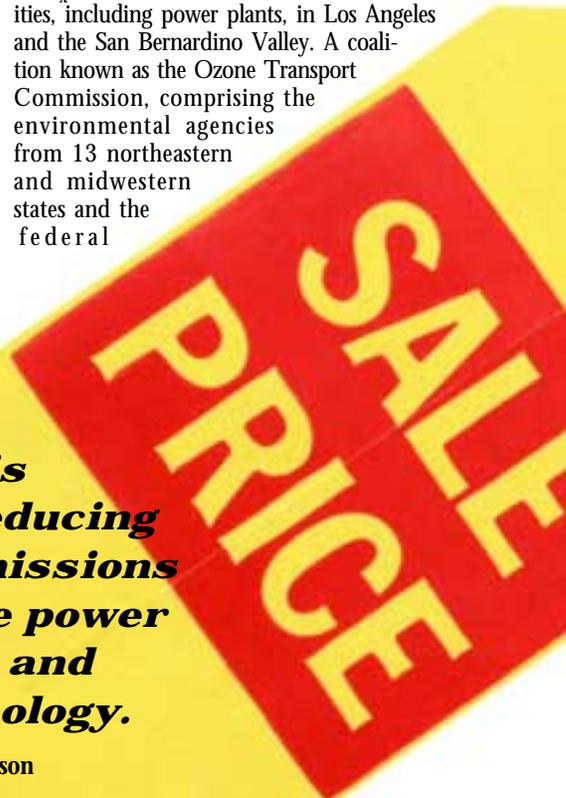
—Marcy Viana, White House spokesperson

greenhouse gases by three tons each for a total of six tons. Taking advantage of its superior technology, the manufacturer can cut its own emissions by five tons at minimal cost while the power plant can only reduce its own emissions cost-effectively by one ton. But by purchasing the rights to the additional two tons from the manufacturer, the power plant pays for another company to reduce greenhouse gases on its behalf. In this win-win situation, the manufacturer takes in revenues for reducing pollution while the power plant avoids higher costs by passing off its emissions reductions agreement to another source.

According to Sandor, the CCX will facilitate trades among seven midwestern states that together comprise the fourth-largest trading bloc in the world. The CCX also plans to include Brazil as a member, indicating the organization hopes to achieve an international presence. Says Sandor, "We've had a fantastic response from industry. We expect to be in the design phase for 12 months and to begin trading by 2002."

The states have also gotten into the game. In Southern California, a cap-and-trade

program known as the Regional Clean Air Incentives Market, or RECLAIM, is being used to control SO₂ and nitrogen oxide (NO_x) air emissions from 360 industrial facilities, including power plants, in Los Angeles and the San Bernardino Valley. A coalition known as the Ozone Transport Commission, comprising the environmental agencies from 13 northeastern and midwestern states and the federal



EPA, has developed a cap-and-trade program for NO_x. And elsewhere, in Chicago, a cap-and-trade program for volatile organic compounds was established by the Illinois EPA in early 2000.

The states have, for the most part, had a measure of success with these programs. The Ozone Transport Commission announced on 10 May 2001 that NO_x emissions for 1999 and 2000 were less than half those reported in 1990, before the cap-and-trade system was implemented. California's RECLAIM system has been in operation since 1993 but is just now beginning to demonstrate results. The reason for the delay, says Sam Atwood, spokesperson for the Diamond Bar-based South Coast Air Quality Management District, which coordinates RECLAIM, is that state-mandated "allocations" (a state term that defines the emissions that can be traded under the cap) for SO₂ and NO_x have only recently been set at levels below actual emissions released by industry. For several years after the program was initiated, facilities regulated under RECLAIM were allowed to emit SO₂ and NO_x at unusually high levels to cushion the

economic shock of a recession that took place during the early 1990s. “By dropping the allocation levels below real emissions, we’re just starting to cross over to the point where the incentive begins to kick in,” says Atwood. “This is when we expect to see voluntary improvements in technology.”

The Question of Mobile Sources

In a recent and somewhat controversial trend, emissions trading schemes have begun incorporating mobile sources, such as cars and trucks. Under this approach, stationary sources such as factories can obtain emission credits from regulators by paying to have old, highly polluting vehicles taken off the road. For example, RECLAIM recently issued a rule allowing stationary sources to receive mobile source credits by replacing diesel-fueled heavy-duty vehicles with cleaner-running alternatives.

Burtraw suggests this practice provides a major opportunity for cost savings. “It can be a lot less expensive to reduce emissions from mobile sources than stationary sources,” he explains. But he concedes that adding mobile sources to the mix doesn’t come without its own unique set of challenges. “People are all too willing to bring in an old lemon that barely runs so they can collect \$500 from a utility company,” he says. In a case like this, the emissions reduction is negligible because the car isn’t driveable anyway.

Goffman says programs that include mobile sources need to incorporate safeguards to prevent this kind of abuse. The challenges exist, he says, but solutions are available if the systems are well designed at the outset. The South Coast Air Quality Management District, for example, only agrees to pay credits for cars that could continue running for three years or more.

Trading Issues

Despite a generally positive response from the stakeholder community, emissions trading still raises a number of important concerns. Perhaps the greatest worry is that it might lead to “hot spots,” or areas of high pollutant exposure. A company that cuts its emissions in half might help reduce average air pollution concentrations in a particular region, but this means little to those who live close to an older facility that buys credits rather than upgrading its pollution control technology.

John Walke, director of clean air projects with the Natural Resources Defense Council in Washington, D.C., suggests that

environmental justice problems could arise if the dirtier facilities are located close to poor communities. “There are a lot of fundamental issues that need to be addressed with these systems,” he says. “One is the extent to which pollution sources may be heavily localized in a particular area. It’s important to consider how much pollution the neighboring communities are already saddled with.”

And what about facilities located upwind of residential communities? Should they be allowed to purchase air pollution credits if downwind populations don’t experience the benefit of cleaner emissions? Experts suggest the answer is no, and that hot spots can be avoided with effective planning. Suellen Keiner, director of the Center for the Economy and the Environment at the National Academy of Public Administration, a public interest group based in Washington, D.C., says potential solutions include discouraging trades across long distances and on-site review of credit uses to protect against hot spots.

Another incentive category that tends to trouble environmentalists is “open market” emissions trading, which is a scheme developed by the EPA in 1995. Unlike cap-and-trade programs, neither the overall sectors nor the individual trading sources regulated under an open market trading system are subject to a cap. Rather, any source that finds that its actual rate of emissions is below permitted levels for even a short time is eligible for credit that it can save for later or sell to another source. A chief concern is that under these schemes industry sets the standard for emissions allowances—not the regulatory agency. This is critical, given widespread agreement among stakeholders that health-protective standards should be set by the government on behalf of the public, while the means of compliance is left to the regulated community.

Burtraw says monitoring emissions under an open market system is particularly challenging. “Unlike cap-and-trade programs, which are often targeted toward large stationary sources that can be monitored at the stack, open trading is geared toward smaller sources, for example dry cleaners,” he explains. “It’s difficult and expensive to monitor actual emissions from these sources, so they tend to be estimated based on economic activity and the use of a given technology. On paper, open market trading seems promising, but in practice monitoring is often poor, and emissions inventories are weak.”

Responding to New Jersey’s announcement of an open market trading system for NO_x, approved by the EPA in early 2001, Environmental Defense called on the agency to withhold additional pending approvals in

states including Michigan, New Hampshire, and Illinois. Also critical of open market trading is the Washington, D.C.–based organization Public Employees for Environmental Responsibility. This group, which says it represents anonymous EPA employees who fear the repercussions of speaking out publicly, issued a white paper in June 2000 called *Trading Thin Air* in which they claim that state and federal agencies don’t have the ability to monitor these programs. According to the paper, open market trading could “cripple enforcement of the Clean Air Act against stationary sources of pollution.”

Despite the uproar, many experts believe open market systems will improve over time. “I do have a healthy dose of skepticism about open market trading,” says Burtraw. “It isn’t based on sound policy and shouldn’t be used on a wide scale. But I also see it as a way to include in trading programs a variety of smaller sources of emissions for which there do not exist emission inventories. At best, open market trading should be viewed as a transitional stepping stone to some better-developed institution that will emerge in the future.”

Outlook for the Future

When applied to the nation as a whole, the EPA suggests in its April 2001 report that “the potential savings from widespread use of economic incentives . . . could be almost one-fourth of the approximately \$200 billion per year currently spent on environmental pollution control in the United States.” In applying these tools, the EPA recommends that regulators consider their use in the context of political acceptability, potential for stimulating technological improvements, and enforceability. A number of important questions need to be considered: How many sources are there for each pollutant? Does a unit of pollution from each source have the same health and ecologic impact regardless of where it’s released? Who’s being affected by the pollution, and will the program reduce these impacts?

A key point raised by Burtraw is that incentives are a tool—not a solution. “You can compare incentives to a hammer,” he says. “You can use a hammer to build a house, or you can use it to pull out the nails. This is the big issue we’re facing now—if we use the incentives to back away from emissions reductions, then we’re using the hammer to pull out the nails. But if we use incentives to aggressively pursue emissions reductions in the most cost-effective way, then we’re building a stronger house for the future.”

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